

Rent-seeking in the Sciences

Terence Kealey, *The Economic Laws of Scientific Research*, Macmillan, Basingstoke, 1996

Reviewed by Eric Jones

PATRIOTISM may be the last refuge of a scoundrel. But Terence Kealey, a Cambridge biochemist, would say that the last refuge is a chair in the public understanding of science. He wishes first to persuade us that scientists are socially insecure, desperately competitive, authoritarian rent-seekers. He is horrifyingly successful at making this stick, aided by a bold, even bull-headed, willingness to show everyone up, whenever possible by their own embarrassing words. One of his examples is the rule-sheet of a Scottish biochemistry lab which includes 'Newspapers and non-scientific reading matter may not be read in the laboratory' and 'I will note any infringement of these rules on your references'.

Next, Kealey wants to establish that in the funding of science *laissez faire* works best, whereas state funding breeds 'government failure' — reducing the total spent, distorting enquiry, and leading researchers to be treated worse than they would be by any private employer. He does this in a clever but intensely opinionated fashion. He adds *ballons d'essai* about everything from historical figures to technical standards, all wrapped in the jokiest style I can ever recall reading in an otherwise serious book. The polemics blur his message though they will not blot it out for the attentive reader.

Kealey is an inquisitive student of history. He sets up many arguments as assaults on his own *bêtes noires*, including Francis Bacon, Jean-Jacques Rousseau, Charles Babbage and Matthew Arnold. His tone may be indicated, not unfairly, by what he has to say about the last two. Babbage proposed a 'Difference Engine' which was, Kealey asserts, nothing more than 'a mechanised abacus'. He 'squeezed no less than 17,000 pounds out of the Government to build his Engine (when the average wage was 2 pounds a week)' (p. 80), and, after fruitlessly exhausting this grant, switched his goal to an 'Analytical Engine' that used punch cards. The government balked at this second project,

which then prompted Babbage into doing the one original thing in his whole life. He inaugurated the tradition by which prominent scientists denounced the government for neglecting science. His *Decline of Science in Britain* was published, with true Babbage incompetence, in 1830, the year before Faraday made the most important of Britain's contributions to science, the discovery of electromagnetic induction ... (p. 81)

Matthew Arnold's thesis was not at all original: the Germans are coming. 'He believed that Bismarck's *Polytechniks* and *Hochschulen* would thrust Germany into scientific, technological and industrial dominance.' Britain's free market could not generate comparable institutions because, 'the free market is quite incapable of plan-

ning anything on a national scale, oh no. This is, of course, rubbish' (p. 343). Certainly, Kealey presents useful, even damning, evidence of the failures of state funding in Germany and Japan. By and large I accept his Smithian view. An open society, the free market and (less obviously) private investment do seem to deliver better scientific and technological results. What relying more on private funding might do for the cultural industries, and how salutary such a change might be, are different issues. As far as science goes, it remains a pity that rhetorical passages like those concerning Charles Babbage and Matthew Arnold — and there are plenty of them — may irritate some readers into discounting the central message.

The book's first 138 pages consist of several chapters of economic history, mostly British, from prehistoric times to the 20th century. These dwell on familiar topics like industrialisation and the comparative performance of Britain, Germany and Japan from the late 19th century. The chapters on the industrial revolution discuss standard examination topics of the *genre*: 'did the steam engine owe more to science than science owed to the steam engine'. The larger aim is always to show that *laissez faire* wins; the particular aims are to invalidate various propositions about the indispensability of science to technology and growth. Answers: new technology comes from old technology, not from new science, as free markets rapidly discover. Industry will fund all the science you really need. If you want economic growth, leave the market alone to allocate resources.

Yet these chapters are largely beside the point. The extent to which history makes the case depends a little too much on the way it is set out. The economic history is a strange mixture of the intelligent, the informative, the amateurish and the deplorable. Like many scientists who turn their hand to history, Kealey tosses strict method out of the window. A tenet of the scientific method is that experiments have to be recorded in such a way that future experimenters may replicate them. Kealey, for all his reading in another field's literature, does not permit the reader to check his sources. He supplies end-notes without page references, which would oblige the reader to hunt for quotations through works as long as the whole of the 'Encyclopedia Britannica, 17th edition'. No one is going to do that. I do not suppose an author could get away with such sloppiness in biochemistry; it is unacceptable in economic history.

At the heart of the book lie three laws, which are propounded and defended by regular social scientific means. They are empirical relationships established by international comparisons of non-military R&D funding and GDP. The first law of funding for civil R&D states that the percentage of national GDP spent rises with national GDP per capita: that is, that rich countries do more scientific work than poor ones. Citation analysis further suggests that 'the richer the country, the better the science'. The second law states that public and private funding displace one another. The third law adds that the displacements are not equal: public funding displaces more than it supplies. This has the force of saying that if governments raise taxes on industry to support their own programs they will reduce private investment disproportionately.

Kealey's laws seem adequately founded in regression analyses, give or take the calibre and appropriateness of the available data. But it is easy to see why his conclusions are resisted when the scientific establishment is accustomed to securing its funds

in political markets, by cosy agreements in committees, by rigging peer review, and similar devices. In a period when the proportions of state and private funding are changing, scientists living on government grants are bound to feel threatened. At the same time, more specific project funding and less by way of block grants is raising up a generation of workers on short-term contracts, chivvied like gipsies from lab to lab. Kealey suggests something by way of remedy without allowing this effect to detract from his broader conclusions.

Kealey's style and message have both proved infuriating to conventional, publicly-funded scientists. He is the *enfant terrible* of British science and an ogre to its funding agencies. In the 1980s the scientific establishment was bleating loudly that British science was in decline (shades of Babbage), so even more government money was needed. Contradicting this so trenchantly brought Kealey up against the unforgiving proponents of conventional wisdom, who also tended to be anti-Thatcherites. However, he bravely persisted; for instance, he continued to demolish the 'declinist' publications of workers in the Science Policy Research Unit of Sussex University, though at what cost to his career one cannot say. Ironically, government spending cuts may transform his views into acceptable rationalisations of the turn towards private funds.

This is a curate's egg of a book. It is astonishingly well-informed, full of tough reasoning and crammed with hilariously damaging quotations about the rent-seeking on which natural scientists spend so much of their time. The better parts are truly hard-hitting. They are supported by evidence drawn from reading so wide as to make one wonder whether the author ever sleeps. Happily, the weaker parts, largely those dealing with history, seldom turn out to undermine the main case that private funding of research is more effective than state funding. The relentless demonstrations of this must come as a revelation to those of us conditioned by government subsidies and bureaucratic control. Experience may have made many of us suspicious of these approaches; this work will crystallise our suspicions.

The book as a whole is hard to appraise without close reading, an exercise which sadly feels rather like fighting through the *bocage*. A more disciplined hand might have made the case easier to follow but, to be fair, would have been unlikely to expose and stop up so many rent-seekers' bolt-holes in such a devilishly entertaining way. A duller author might have deprived us of the eye-popping examples of conniving and farce that surround the government funding of science. My conclusion is that the effort required to study this quirky text is well worth it overall.

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